The necessity of selenium in swine nutrition is an established fact. It is important for optimum reproductive and immune function, and it has an overlapping role with vitamin E to protect body cells against oxidative damage (refer to Figure 1). Selenium deficiency is a global problem and is linked to reproductive, growth, health, and defense mechanism challenges in animal and human health. A diet that is marginally deficient in selenium may predispose swine to more subtle, long-lasting effects versus the easily observable “classical” signs of a severe selenium and/or vitamin E deficiency noted in Table 1.

Sodium selenite (inorganic source) is the traditional source of supplemental selenium for swine diets. Another source of dietary selenium is “organic” selenium, with the most common form being selenium-yeast. Regardless of source, the maximum amount of supplemental selenium that can be added to swine diets is 0.3 ppm (FDA mandated upper limit). The FDA upper limit drives researchers to look for alternative selenium sources that are more available. Swine research has shown that selenium concentrations in blood and tissues of sows and nursing litters, colostrum, and milk are greater in sows fed selenium-yeast than sows fed inorganic selenium, even when both selenium sources were provided at the same selenium levels (0.15 or 0.30 ppm). This suggests selenium-yeast has a better bioavailability compared to inorganic selenium. The structure difference between organic and inorganic selenium products may account for the difference in bioavailability. About 65% of the selenium in selenium-yeast is in the form of selenomethionine, which is formed by replacing a sulfur atom in methionine with a selenium atom. When a selenium-yeast product is consumed, selenomethionine is absorbed and metabolized by livestock in the same way as the amino acid methionine.

Increasing the concentration of selenium in the protein of various tissues, milk, and colostrum may provide important benefits from performance and health standpoints. A large commercial study using 760 sows demonstrated that litter weight was greater and pre-weaning mortality was lower for pigs from sows fed a selenium-yeast product than from sows fed an inorganic selenium product from day 75 of gestation through lactation. Following 1000 pigs from weaning to 50 lb body weight, another benefit during the nursery stage was linked to feeding dams an organic selenium product. Although daily gain and feed efficiency were not affected, less morbidity and mortality were observed for nursery pigs coming from sows fed an organic selenium product.

Based on this information, the inclusion of organic selenium in sow gestation and lactation diets has shown to be beneficial.

### Table 1: Potential Signs of Selenium/Vitamin E Deficiency

**Sows,**
- Longer farrowing time
- Less frequent milk let down
- More metritis-agalactia

**Neonatal Pigs**
- Iron toxicity
- Weak/spraddled-pigs

**Weaned Pigs**
- Sudden death
- Mulberry heart disease
- Diarrhea (not controllable with antibiotics)